

# A STUDY IN POSTGRADUATE DISTANCE EDUCATION COURSES IN THE UNIVERSITY OF THE PHILIPPINES OPEN UNIVERSITY

Bonito, S.;Orias, C.;Reyes, C.;Ramos, R.;Serrano, J.;  
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# Impact of OER on Cost and Quality of Course Materials

A study in Postgraduate Distance Education Courses in the University of the Philippines Open University



Sheila Bonito, Carmelita Orias,  
Charisse Reyes, Rita Ramos, Joane Serrano  
University of the Philippines Open University



# Introduction



## The University of the Philippines Open University:

- part of the University of the Philippines system mandated to **provide wider access to quality higher education** through open learning and distance education
- utilizes a wide range of teaching and learning materials and **online technologies** to deliver its courses
- mandated by the Commission on Higher Education of the Philippines to **help HEIs in developing distance education courses**

# Introduction

## The University of the Philippines Open University:

- offers 3 undergraduate programs and 27 postgraduate degree programs in the Faculty of Education, Faculty of Information and Communication Studies, and Faculty of Management and Development Studies
- has 3524 students spread in 70 countries, mostly Filipino graduate students



# Introduction

## The University of the Philippines Open University:

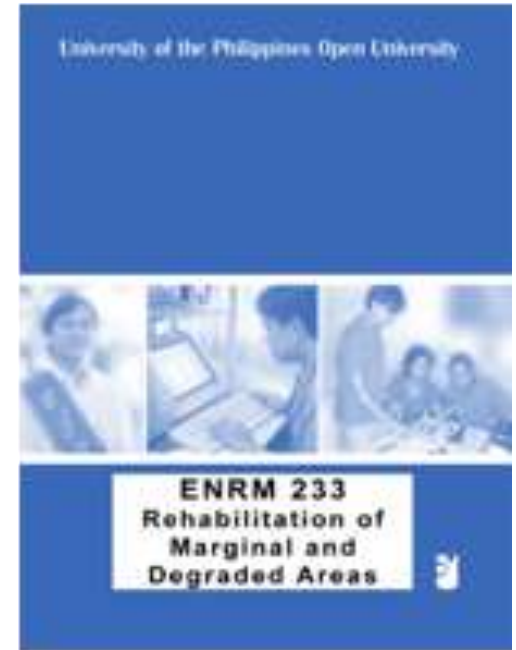
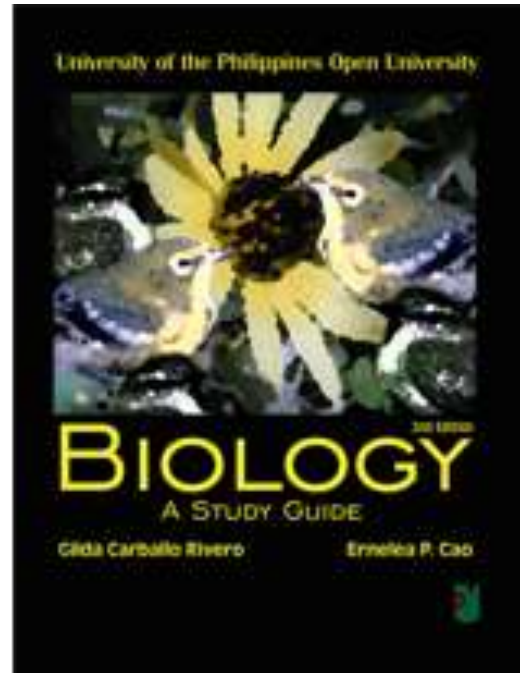
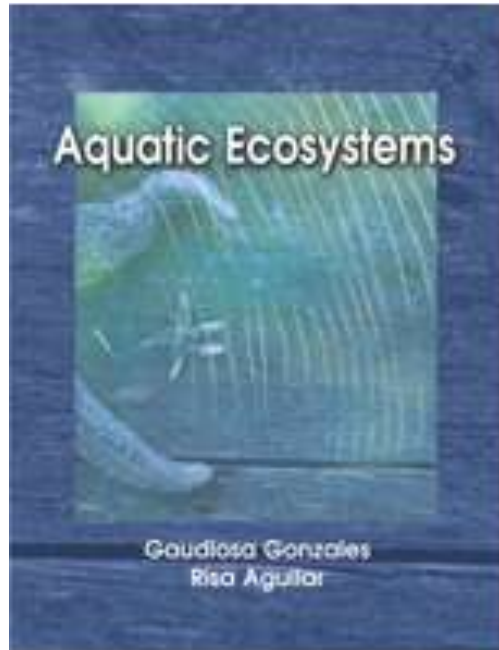
- started raising **awareness on use of OER** in 2011
- shifted the **development of courses materials** from developing textbook-like modules to resource-based course packages in 2012 and started pushing for use of OER in 2014
- drafted a **policy and strategies on the use of OER** in the University of the Philippines Open University in 2012
- launched a study to look into the cost and quality of course materials development under the IDRC's ROER4D-WOU **OER Impact Studies** in 2015



# Introduction

- Extent of Use of OER
- Impact of OER on Quality of Courses:
  - Education courses
  - Health courses
  - Development courses
- Cost-Effectiveness of OER





Extent of Use of OER in Postgraduate  
Distance Education Courses in UPOU

# Extent of Use of OER

- How many courses use OER?
- What are the sources of these materials?
- What are the types of resources used?
- What type of licenses?
- How were these resources used?
- What types of learning activities were involved in the use of these resources?





# Extent of Use of OER

- 48 courses from three fields of disciplines (Education, Health and Development Studies) offered during 2015-2016 were reviewed and analyzed to determine extent of use of OER in the course packages



# Extent of Use of OER

- How many courses use OER?

Disciplines	Number of courses included	Number of modules included	Percentage of use of OER in the courses
Education	16	154 <sup>a</sup>	25%
Health	16	213 <sup>b</sup>	50%
Development	16	168 <sup>c</sup>	12%

a – average of 9-12 modules in Education

b – average of 13-14 modules in Health

c – average of 10-11 modules in Development

# Extent of Use of OER

- What are the sources of these materials in the course?

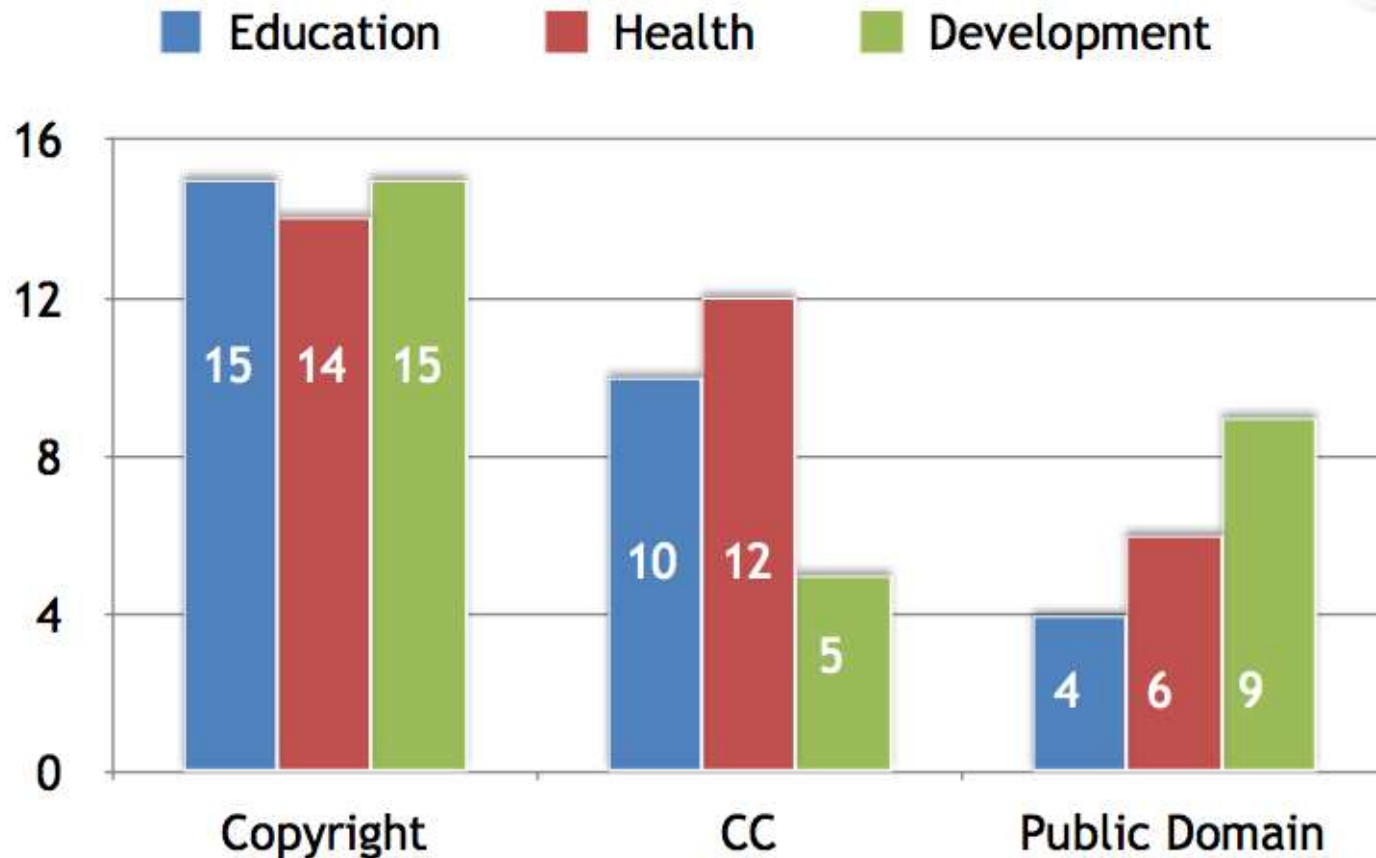
Discipline	Links to internet	Print copies
Education	11	13
Health	16	7
Development	14	11

# Extent of Use of OER

- What are the types of resources used?
  - In terms of type or resources according to **media format**, nearly all of the courses have texts in them such as:
    - books, book chapters, journal articles
  - There were also **webpages** (58%) and **videos** (50%) and some **slide presentations** (25%)

# Extent of Use of OER

- What type of licenses?



# Extent of Use of OER

- How were these resources used?



Discipline	Used as a whole	Used in part only	Revise-translate	Revise-resequence	Revise-adapt	Remix-combine
Education	16	3	1	1	0	1
Health	16	8	0	1	1	1
Development	15	4	0	0	1	0

# Extent of Use of OER

- What types of learning activities were involved in the use of these resources?

Disciplines	Read/view/ answer study questions	Read/view/ discuss in forums	Write critical review/ analysis	Share with workplace/ community
Education	12	11	4	4
Health	16	12	6	3
Develop- ment	16	2	8	0



## Impact of OER on Quality of Courses: Education, Health & Development



# Research Questions

- What is the impact of using OER on the quality of course materials?
- What is quality of course materials? How/Where can it be observed?
  - Quality as a feature of the resource itself: relevance, currency, accuracy
  - Quality as something that comes from how the resource is used (by the teacher and by the learner) - what learning and how learning is fostered by use of OER





Quality is measured in terms of:

- (1) disciplinary fit of resources selected
- (2) alignment of resources with course objectives
- (3) use of variety of resources by type of media
- (4) facilitating scaffolded learning
- (5) encouraging different types of learning activities
- (6) fostering engagement and collaboration

Quality is measured from the student and faculty perspectives

# Indicators of quality of course materials



Indicators of quality of course materials	Instructional issues addressed	
disciplinary fitness of resources selected ( <i>originally “adaptation to course context”</i> )	<b>Design of instruction</b>	how to ensure curriculum quality (disciplinary alignment; accuracy, completeness and currency of content)
alignment of resources with course objectives		how to align resources with course objectives
variety of resources by type of media (print, video, audio, multimedia)		how to meet the needs of different/diverse learners: multiple perspectives, learning styles
use of narrative vs. interactive resources		how to engage learners: interactivity, etc
use of adaptive resources (e.g. tutorials, quizzes)		how to scaffold learning

# Education courses

Program	Courses	Program	Courses
Diploma in Science Teaching	EDSCI 201 Foundations of Science Education	Diploma in Language and Literacy Education	LLE 201 Language Acquisition Theories and Principles
	EDSCI 211 Principles of Biology		LLE 202 Foundations of Reading and Literacy
	EDSCI 212 Anatomy and Physiology		LLE 203 Trends in Reading and Literacy Instruction
	EDSCI 232 Fundamental Physics II		LLE 204 Second Language Teaching
Diploma in Social Science Education	SSE 202 The Study of History and Geography		LLE 207 Assessment in Language and Literacy Education
Graduate Certificate and Master of Distance Education	EDDE 222 m-Learning	Diploma in Mathematics Teaching	EDMT 204 Set Theory for Teachers
	EDDE 231 Planning and Managing Networked Learning		EDMT 207 Number Theory for Teachers

# Results of the study

Perceptions of faculty

## ○ Characteristics of learning resources



	Matches the learning objective	Relevant to module topic	Up to date	Provides accurate information	From a credible source	Appropriate to the level of the course	Appropriate to the learners
% of learning resources	58.6	72.4	31.0	44.8	55.2	75.9	58.6

# Results of the study

## Perception of students

### ○ Characteristics of learning resources

	Matches the learning objective	Relevant to module topic	Up to date	Provides accurate information	From a credible source	Appropriate to the level of the course	Appropriate to the learners
% of learning resources	91.9	94.9	78.8	84.8	86.9	86.9	87.9

# Results of the study



## Perceptions of faculty

### ○ Rating of learning resources

Description	Mean Rating*
There is a sufficient number of learning resources for students to meet the learning objective/s	4.38
There is sufficient variety of resources by type of media used (print, video, audio, multimedia)	3.13
All module topics are covered by the learning resources	4.25
The learning resources address different learning styles	3.13
The learning resources provide multiple perspectives	3.63

\* 5 – highest rating; 1- lowest rating

# Results of the study

## Perception of students

### ○ Rating of learning resources

Description	Mean Rating*
There is a sufficient number of learning resources for students to meet the learning objective/s	4.29
There is sufficient variety of resources by type of media used (print, video, audio, multimedia)	3.86
All module topics are covered by the learning resources	4.22
The learning resources address different learning styles	3.88
The learning resources provide multiple perspectives	4.18

\* 5 – highest rating; 1- lowest rating





# Results of the study

## Perception of faculty experts

### ○ Characteristics of learning activities

	Relevant to the learning objectives	Appropriate to the level of the learner	Fosters critical thinking	Fosters creativity	Promotes collaborative learning
% of learning activities	93.5	87.1	90.3	83.9	71.0



# Results of the study



## Perception of students

### ○ Characteristics of learning activities

	Relevant to the learning objectives	Appropriate to the level of the learner	Fosters critical thinking	Fosters creativity	Promotes collaborative learning
% of learning activities	93.5	87.1	90.3	83.9	71.0

# Results of the study

## Perception of faculty experts

### ○ Rating of learning activities

Description	Mean Rating*
There is a variety of learning resources	4.38
The learning activities enable student to achieve learning objectives	3.25
The learning activities facilitate learning	4.38
The learning activities allow students to interact with the learning resources	3.13
The learning activities develop critical thinking (synthesis and evaluation).	3.63
The learning activities enable students to apply knowledge learned in another or in their own context (i.e. outside of the course)	3.33
The learning activities promote independent learning	3.33

\* 5 – highest rating; 1- lowest rating



# Results of the study

## Perception of students

### ○ Rating of learning activities

Description	Mean Rating*
There is a variety of learning resources	4.30
The learning activities enable student to achieve learning objectives	3.89
The learning activities facilitate learning	4.20
The learning activities allow students to interact with the learning resources	3.86
The learning activities develop critical thinking (synthesis and evaluation).	4.03

\* 5 – highest rating; 1- lowest rating



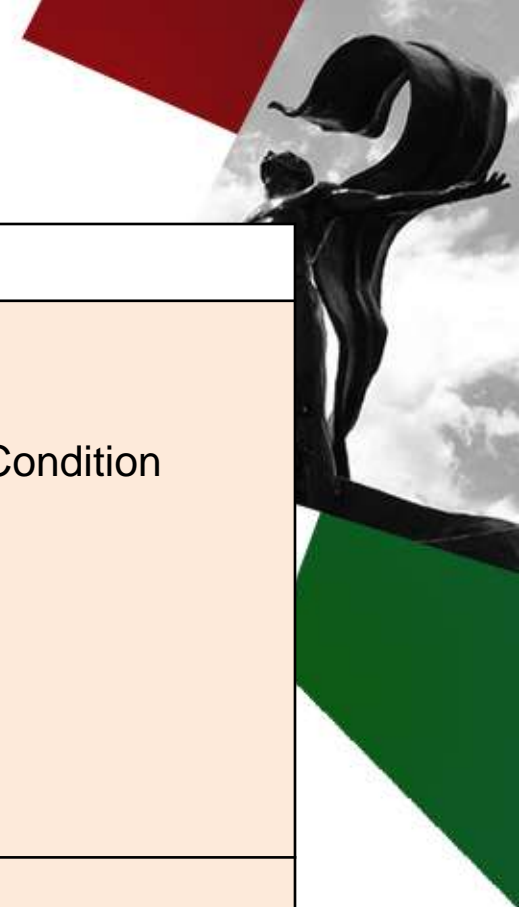
# Conclusion

- In education:
  - faculty perceive that resources used are mostly appropriate to the level of the course (76%), relevant to topics (72%)
  - among students, resources perceived to match learning objectives (92%)
  - with regard to learning activities, they are perceived to be relevant to learning objectives (94%) and fosters critical thinking (90%)



# Health courses

Program	Courses
Master of Arts in Nursing	N204 Advanced Pathophysiology N299 Nursing Research Methods In Nursing N261 Nursing Care of Patients with Cardiovascular Condition N240 Concepts and Principles in Nursing Administration N241 Human Resource Management in Health N298 Statistical Methods in Nursing N260 Advanced Adult Health Nursing N262 Oncology Nursing N242 Organizational Development in Nursing
Diploma/ Master of International Health	IH201 International Health and Development IH202 Global Disease Epidemiology and Control IH212 Health Promotion Practice IH223 Human Resource Management in Health IH224 Health Promotion Leadership and Management IH 211 Health Promotion Theory IH 221 Health Service Development and Management IH 213 Health Promotion for Equity and Sustainable Development IH 222 Healthcare Policy and Governance





# Perceptions of faculty

## ○ Characteristics of learning resources

Matches the learning objective	Relevant to module topic	Up to date	Provides accurate information	From a credible source	Appropriate to the level of the course	Appropriate to the learners
91.7%	95.8%	79.2%	83.3%	58.3%	62.5%	45.8%



# Perception of students

## ○ Characteristics of learning resources

Matches the learning objective	Relevant to module topic	Up to date	Provides accurate information	From a credible source	Appropriate to the level of the course	Appropriate to the learners
85.4%	88.2%	61.2%	63.6%	65.6%	71.2%	81.2%





# Perceptions of faculty

## ○ Rating of learning resources

There is a sufficient number of learning resources for students to meet the learning objective/s	There is sufficient variety of resources by type of media used (print, video, audio, multimedia)	All module topics are covered by the learning resources	The learning resources address different learning styles	The learning resources provide multiple perspectives
4.75	4.25	4.75	3.50	3.50

\* 5 – highest rating; 1- lowest rating

# Perception of students

## ○ Rating of learning resources



There is a sufficient number of learning resources for students to meet the learning objective/s	There is sufficient variety of resources by type of media used (print, video, audio, multimedia)	All module topics are covered by the learning resources	The learning resources address different learning styles	The learning resources provide multiple perspectives
4.35	3.91	4.21	4.00	4.20

\* 5 – highest rating; 1- lowest rating

# Perception of faculty experts

## ○ Characteristics of learning activities



Relevant to the learning objectives	Appropriate to the level of the learner	Fosters critical thinking	Fosters creativity	Promotes collaborative learning
100%	100%	33.3%	16.7%	25%

# Perception of students

## ○ Characteristics of learning activities



Relevant to the learning objectives	Appropriate to the level of the learner	Fosters critical thinking	Fosters creativity	Promotes collaborative learning
41.2%	87.5%	80.6%	66.7%	72.2%

# Perception of faculty experts

## ○Rating of learning activities



There is a variety of learning resources	The learning activities enable student to achieve learning objectives	The learning activities facilitate learning	The learning activities allow students to interact with the learning resources	The learning activities develop critical thinking (synthesis and evaluation ).	The learning activities enable students to apply knowledge learned in another or in their own context (i.e. outside of the course)	The learning activities promote independent learning
4.00	4.00	4.00	3.25	4.00	3.50	3.75

# Perception of students

## ○Rating of learning activities



There is a variety of learning resources	The learning activities enable student to achieve learning objectives	The learning activities facilitate learning	The learning activities allow students to interact with the learning resources	The learning activities develop critical thinking.
4.35	3.91	4.21	4.00	4.20

# Conclusion

- In health:
  - faculty perceive that resources used are mostly relevant to topics (96%) and matches learning objectives (92%);
  - among students, relevance to module topics (88%) and resources perceived to match learning objectives (85%)
  - with regard to learning activities, they are perceived to be relevant to learning objectives (100%) and appropriate to the level of the learners (100%)



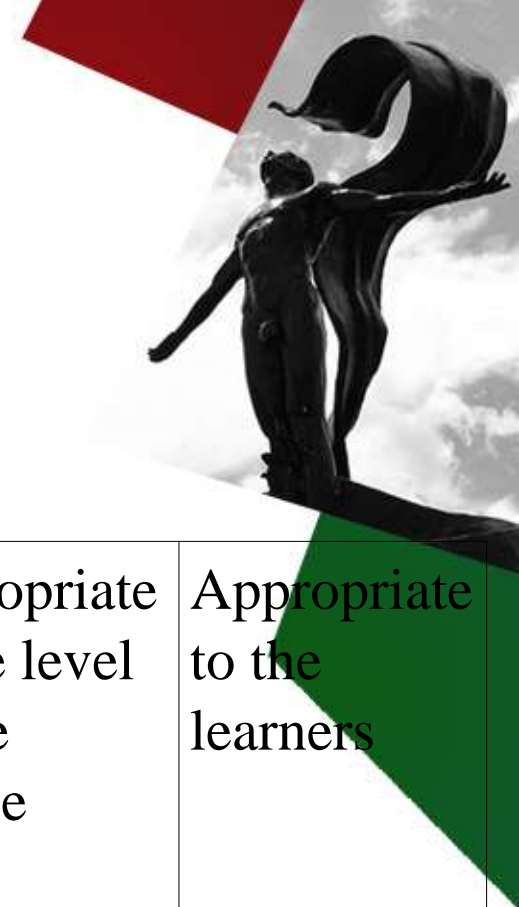
# Development courses

Program	Courses	Program	Courses
Diploma/Master in Environmental and Natural Resources Management	ENRM 223 - Ecosystem Structure and Dynamics	Graduate Certificate/Master in ASEAN Studies	ASEAN 201
	ENRM 257 - Sustainable Tourism Development		ASEAN 202
	ENRM 281 - Statistics Applied to Environmental Management		ASEAN 203
Master of Public Management	PM 208 PM 230 PM 243 PM 281		ASEAN 204
Diploma/Master in Social Work	SW 202 SW 210 SW 220	Master of Development Communication	DEVC 207



# Perceptions of faculty

## ○ Characteristics of learning resources



Matches the learning objective	Relevant to module topic	Up to date	Provides accurate information	From a credible source	Appropriate to the level of the course	Appropriate to the learners
72.4%	72.4%	75.9 %	72.4%	82.8%	82.8%	82.8%



# Perceptions of students

## ○ Characteristics of learning resources

Matches the learning objective	Relevant to module topic	Up to date	Provides accurate information	From a credible source	Appropriate to the level of the course	Appropriate to the learners
82.9%	73.9%	56.8%	64.8%	68.2%	64.8	68.2%

# Perceptions of faculty

## ○ Rating of learning resources



There is a sufficient number of learning resources for students to meet the learning objective/s	There is sufficient variety of resources by type of media used (print, video, audio, multimedia)	All module topics are covered by the learning resources	The learning resources address different learning styles	The learning resources provide multiple perspectives
3.83	3.83	4.50	3.33	3.50

# Perceptions of students

## ○ Rating of learning resources



There is a sufficient number of learning resources for students to meet the learning objective/s	There is sufficient variety of resources by type of media used (print, video, audio, multimedia)	All module topics are covered by the learning resources	The learning resources address different learning styles	The learning resources provide multiple perspectives
4.18	3.43	4.12	3.67	3.89

# Perception of faculty experts

## ○ Characteristics of learning activities



Relevant to the learning objectives	Appropriate to the level of the learner	Fosters critical thinking	Fosters creativity	Promotes collaborative learning
100%	85.7%	85.7%	85.7%	85.7%

# Perception of students

## ○ Characteristics of learning activities



Relevant to the learning objectives	Appropriate to the level of the learner	Fosters critical thinking	Fosters creativity	Promotes collaborative learning
81.0%	77.2%	74.7%	67.1%	64.6%

# Perception of faculty experts

## ○Rating of learning activities



There is a variety of learning resources	The learning activities enable student to achieve learning objectives	The learning activities facilitate learning	The learning activities allow students to interact with the learning resources	The learning activities develop critical thinking (synthesis and evaluation).	The learning activities enable students to apply knowledge learned in another or in their own context (i.e. outside of the course)	The learning activities promote independent learning
3.00	4.67	4.50	4.00	3.67	4.50	4.83

# Perception of students

## ○Rating of learning activities



There is a variety of learning resources	The learning activities enable student to achieve learning objectives	The learning activities facilitate learning	The learning activities allow students to interact with the learning resources	The learning activities develop critical thinking.
3.94	3.44	3.99	3.67	3.86



# Conclusion

- In development studies:
  - faculty perceive that resources used are mostly from a credible source (83%) appropriate to the level of the course (83%), and appropriate to the level of the learners (83%);
  - among students, resources perceived to match learning objectives (83%)
  - with regard to learning activities, they are perceived to be relevant to learning objectives (100%)





Cost-effectiveness of OER

# Cost-effectiveness



- What is the cost of producing OER?
  - Cost is measured in terms of the **length of time** spent by a course author in designing and writing the course material and **the author's salary given his/her rank or position**
- What is more cost-effective: OER or non-OER?
  - Cost-effectiveness is based **on cost per unit of quality of course materials**
  - Quality based on a 5-item rating scale on: **sufficient number, variety, completeness, appropriateness to different learning styles and multiple perspectives of resources**

# Cost-effectiveness

- Background on course authors



	Years of teaching	Position/ Rank	Appoint- ment	Educational background	Experience in developing course material
Non-OER	13	5 Asst Prof 4 Asso/ Prof	6 Full time 3 Part time	6 MA 3 PhD	Yes – 3 No – 6
OER	10	4 Asst Prof 5 Asso/Prof	5 Full time 4 Part time	7 MA 2 PhD	Yes – 5 No – 4

# Cost-effectiveness

- Time spent in developing course package

	Average number of modules per course	Average number of resources per course	Average number of learning activities per course	Average number of hours spent in writing course package
Non-OER	12	19	13	148 hours
OER	9	33	26	135 hours

# Cost-effectiveness

- Cost-effectiveness

Faculty perspective	Cost (USD)	Quality	Cost/Effect	ICER*
RBCP	2406	3.31	727	
OER	2253	3.72	606	-373

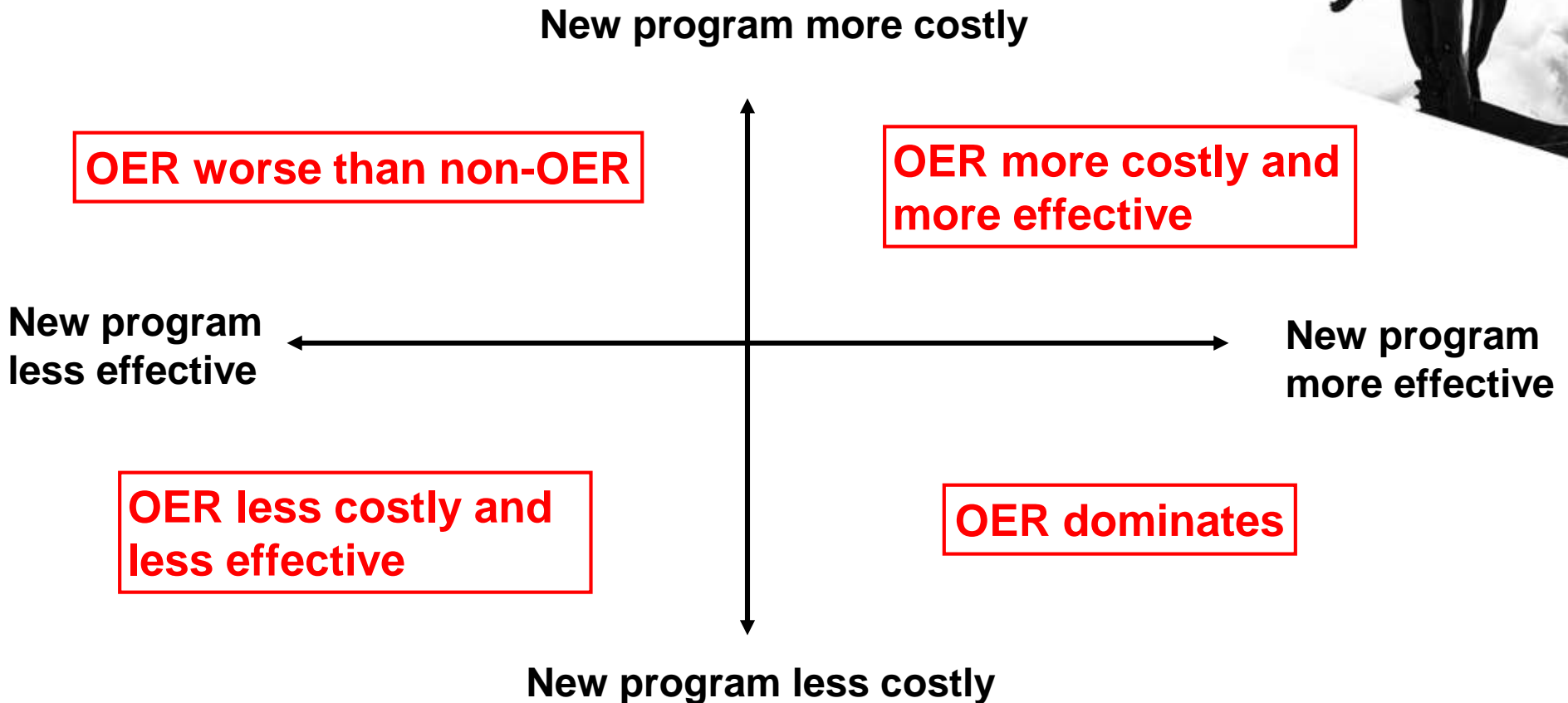
Student perspective	Cost (USD)	Quality	Cost/Effect	ICER
RBCP	2406	3.60	668	
OER	2253	4.10	550	-306

Incremental cost-effectiveness ratio (ICER) - represents the average incremental cost associated with 1 additional unit of the measure of effect

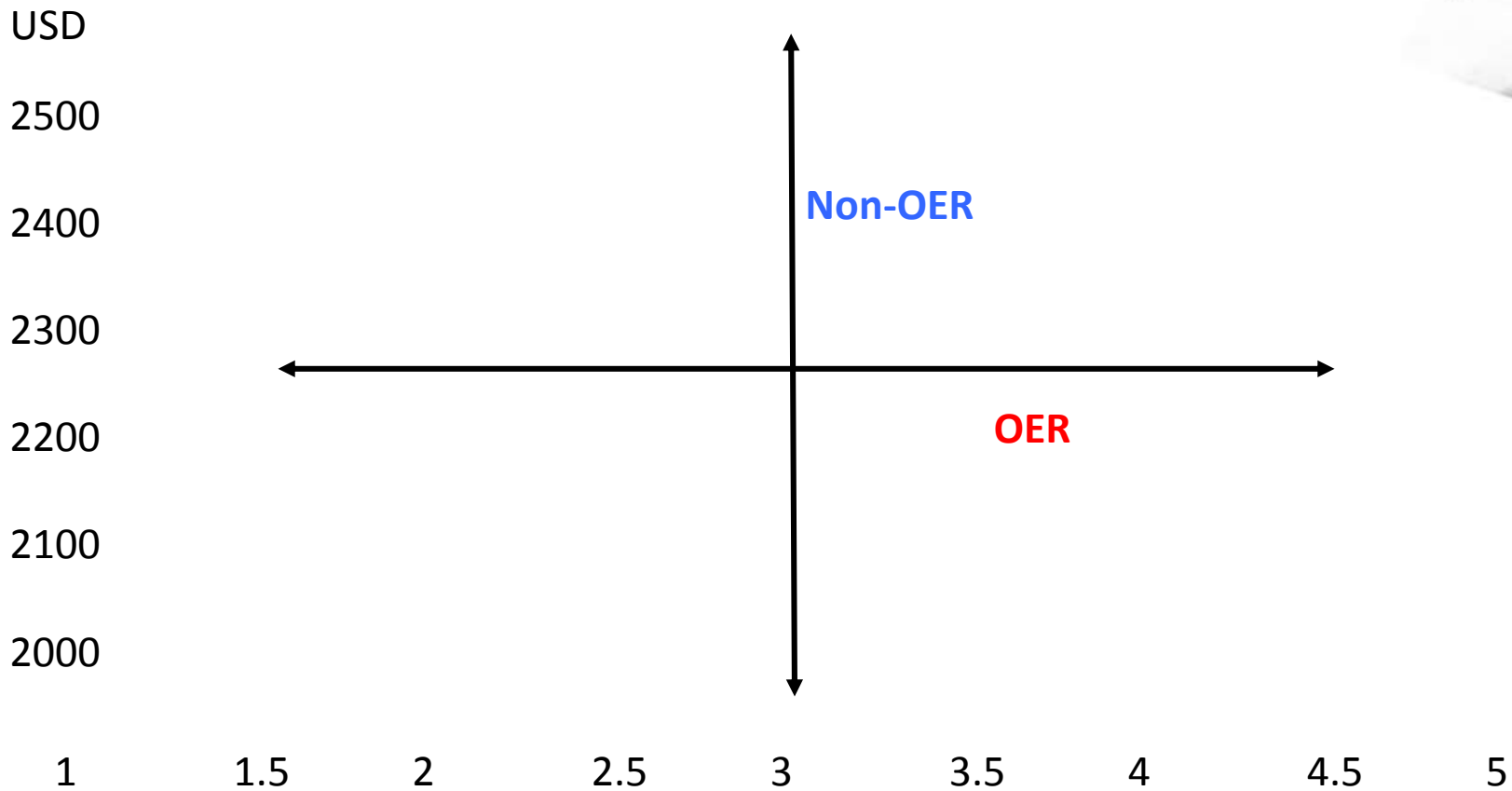
$$ICER = \frac{(C_1 - C_0)}{(E_1 - E_0)}$$



# Cost-effectiveness



# Cost-effectiveness





# Cost-effectiveness

- Top three reasons for longer time spent in developing specific modules

Education	Difficulty in getting started Difficulty in finding resources Lack of expertise in teaching the topic
Health	Challenge in designing learning activities Difficulty in getting started Difficulty in finding resources
Development	Difficulty in finding resources Challenge in designing learning activities Difficulty in finding time to write

# Cost-effectiveness

- Top three factors in selecting resources used in the module

Education	Relevance Appropriateness for level of learners Credibility of authors/ publishers
Health	Relevance Appropriateness for level of learners Currency, Credibility, Accessibility, Media type
Development	Relevance, Appropriateness, Accessibility, Media type

# Conclusion

- Use of OER in course materials was seen to be cost-effective compared to use of non-OER in terms of cost and quality of resources

